DOCUMENT RESUME

ED 303 233 PS 017 476

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TITLE Three's Company? An Evaluation of the Effect of a Third Teacher in Selected Kindergartens. Abridged Version of Report.
INSTITUTION Otago Univ., Wellington (New Zealand). Education Dept.
PUB DATE Mar 88
NOTE 32p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Behavior Change; Classroom Observation Techniques; Classroom Research; Comparative Analysis; Foreign Countries; Interviews; *Kindergarten; Kindergarten Children; Parent Attitudes; *Peer Relationship; Primary Education; *Student Improvement; Teacher Attitudes; *Teacher Student Ratio
IDENTIFIERS *New Zealand

ABSTRACT

An evaluation was made on the effects of an improved staff ratio in New Zealand kindergartens. Aspects of four typical kindergartens staffed by two teachers were compared with aspects of four kindergartens that were provided with a third teacher. Data were collected from teachers, kindergarten children and parents. Findings indicated that the introduction of a third teacher was associated with a statistically significant reduction in children's negative behavior in relation to peers. Children had more positive play with peers, talked more, and interacted more with teachers after the third teacher arrived. After the third teacher was introduced, teacher behavior showed fewer changes than did child behavior, but teachers in the third-teacher kindergartens made more nonverbal initiations to children, talked more to parents, were more involved in children's play, and talked more to each other. Teachers believed that the introduction of a third teacher needed to be accompanied by considerable in-service work on leadership and management, and some findings lent credence to that belief. Adult-child ratios did not improve as much as expected in kindergartens with three teachers. It was concluded that the third teacher was a valuable addition, and that transition support should be provided. (RH)

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# Three's company? An evaluation of the effect of a third teacher in selected kindergartens*

Abridged Version of Report

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March, 1988

PS 017476

* This study was carried out under contract to the Research Division, Department of Education, Wellington. The full version of the report is held in the Department. This abridged version of the report does not include observational or interview schedules and contains only selected data tables. Copies of instruments or data tables may be obtained from the author or from the Department of Education.

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Acknowledgements

The assistance of parents and teachers of the 8 kindergartens involved in the study is warmly acknowledged. Many teachers were initially uncertain about being involved in the study, especially about being observed, but they willingly cooperated with us. We thank them for their warm and friendly treatment of the researchers, who were always made to feel at home in the kindergarten. We also thank Lyn Bruce and Joy Ramsay, the Senior Head teachers, for their assistance with setting up the study - especially in arranging relievers, a task which we know was difficult. Department of Education staff and Kindergarten Union and Association staff assisted the researcher in every way possible. We would also like to thank our Advisory Committee:- Val Burns, Ann Dickerson, Claire Doig, Aven Hamilton, Kwok-Wing Lai, Ian Landreth, and Bernice Lindgren, for their assistance with setting up the study. Kwok-Wing Lai's assistance with data analysis was particularly appreciated.

My brother, Hugh Ridall, died a week before we began to collect data for the study. I should like to dedicate the study to his memory.

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## Abstract

The present study evaluates the effect of an improved staff ratio in New Zealand kindergartens. Four kindergartens which acquired a third teacher were compared with four contrast kindergartens which continued with their usual staffing of two teachers. Data were collected from each kindergarten on three occasions. Fourteen children from 3 teacher kindergartens and 21 children from 2 teacher kindergartens were observed for 30 minutes, in November, March and July. Staff members were also interviewed and observed on the 3 occasions - 16 staff members were interviewed before the third teacher arrived at the kindergarten and 20 after the third teacher started. Thirty six parents filled in a questionnaire concerning their feelings about the kindergarten before and after the third teacher was introduced. The introduction of a third teacher was associated with a statistically significant reduction in children's negative behaviour to peers. Children played more positively with peers, talked more and interacted more with teachers after the third teacher started. Teacher behaviour showed fewer changes than child behaviour after a third teacher was introduced, but teachers in third teacher kindergartens made more non-verbal initiations to children, talked more to parents, were more involved in children's play and talked to each other more with the extra staff member. Job satisfaction among kindergarten teachers was high despite high reported levels of stress but few consistent changes to feelings about work occurred after a third teacher joined the kindergarten. Teachers in two teacher kindergartens were extremely unhappy about not getting a third teacher. Most teachers in 3 teacher kindergartens reported that things were going well in their work with children and parents, but problems with interpersonal relationships between staff were reported in 2 of the 4 kindergartens. Teachers believed that introducing a third teacher needed to be accompanied by considerable in-service work on leadership and management, especially for head teachers and senior teachers. Parents were generally very positive about their children's kindergarten experience. There was considerable variation in the amount of actual parent involvement in the kindergarten but those who were not involved had many other demands upon their time, such as younger children. A few parents suggested ways that staff/parent communication could be improved. Actual adult/child ratios were not improved as much as expected in three teacher kindergartens since there appeared to be more non-staff adults participating in two teacher kindergartens than in three teacher kindergartens, which may have resulted in fewer statistically significant findings. It was concluded that the third teacher was a valuable addition but that support needed to be provided to kindergartens in the transition from a staff of two to three.

The issue of teacher-child ratios in kindergartens has been been a pressing one for many years. Twelve years ago Wendy Lee wrote:

> Kindergartens in New Zealand have teacher/child ratios which are among the highest in the Western world for preschool institutions. Under the present system it is simply not possible for teachers to utilise their skills to their maximum potential. For a teacher to spend a mere two minutes with each child individually takes more than half of an afternoon. 'Mass supervision' is a very poor substitute for quality preschool education, but with large numbers of very young children it often becomes unavoidable (Lee, 1976, p10).

For the majority of kindergarten teachers, the situation has not changed. Some kindergartens have acquired a third teacher on the basis of special needs. The implementation of a new staffing scheme in kindergartens with the gradual introduction of extra teachers will further increase the number of kindergartens with a third teacher. At the beginning of 1987 nine additional New Zealand kindergartens had a third teacher introduced.

A national in-service course was held at the Lopdell Centre in Auckland in 1985 on the issue of the best way to use a third teacher in kindergartens. A third teacher, it was argued, should improve the quality of teacher-child interactions. For example individualized programming, responsiveness to child interests, observation of children, utilization of the strengths and experiences of children from all cultural and social groups, were all believed to be more achievable with a third teacher. In addition there would, it was believed, be the opportunity to develop more systematic administrative practices, better planning, evaluation, record-keeping, staff development and communication. A third area where there would be greatly increased opportunities with a third teacher was thought to be work with families, for instance the time to share and exchange information with parents about individual children.

Improving staff-child ratios is costly, so it is important for decision-makers to know how the introduction of a third teacher can be implemented most effectively. Kindergartens yet to receive a third teacher may learn from the experiences of kindergartens who have already gained a third teacher about ways to make the most of their new staff member. The Lopdell course found that some kindergartens were more effective than others at using a third teacher effectively. This study asks if this is still so and if so why.

Bronbrenbrenner (1979) believes that ecological transitions (changes in the position of a person in the ecological environment through changes in roles or setting) are very important in the developmental process. He argues that every ecological transition constitutes "a ready-made experiment with a built-in, before-after design" (p27). Hence the present study seeks to utilise the naturally occurring event of the introduction of a third teacher into kindergartens to study its impact.

The ABT studies in the United States have identified staff-child ratio as an element of quality childcare (Ruopp et al, 1979; Travers et al,

1980). At the 3 to 5 year-old level, Travers et al studied 57 full-time childcare centres in Atlanta, Detroit and Seattle, where they observed 1,100 children, interviewed 129 caregivers and 1,100 parents. The effect of natural variations in staff-child ratio were examined and also two intervention studies improving child-staff ratio were carried out. The variation in ratios was quite narrow - between 1:5 and 1:9. Although the study showed that children had less task persistence, less involvement and more wandering in high ratio centres, they did not find the dramatic effects of ratio which occurred for under 3 year-olds. Ruopp et al (1979) found that there were many negative consequences for infants in high ratio centres - there were more signs of distress, more apathetic and depressed children, more controlling interactions from teachers and more exposure to danger. Travers et al found that caregivers in low ratio centres did not interact more with children but did increase their interactions with other adults and involvement in activities not involving children.

A study by Clift (cited by Meade, 1985) carried out in the U.K. showed that when teacher numbers increased to having 3 or more adults for a roll of 20 or 30, teachers often became less involved with the children. They spent more time talking to other adults or more involved in housework.

Bruner's (1980) study of pre-school centres in Oxford showed that children were more likely to be involved in elaborate play and prolonged and connected conversations when there was an adult nearby, even if the adult was not actually interacting with the children. Such indirect evidence adds to the view that staff-child ratio has important consequences for the nature and quality of children's learning.

A South Australian observational and interview study (Russell, 1985) of 27 kindergartens, compared kindergartens under 3 types of teacher/child ratio:- 3 teachers to 24 children (high); 3 teachers to 30 children (average - the naturally occurring ratio); and 3 teachers to 36 children (low). There was a tendency for social interaction between peers and watching others to increase with lower staff-child ratios and the number of annoy/tease behaviours also increased with less favourable ratios. Children spent more time outside, further away from staff, in larger groups and less time in solitary play as numbers increased. The effect on staff behaviour was not as pronounced as that on child behaviour. Staff carried out similar programmes under different ratio conditions. Under lower ratios staff seemed to be working harder. They were also more likely to be outside or working with large groups of children.

There is some New Zealand research relevant to child-teacher ratio. Rogers & Hawk (1982) carried out an in-depth interview study with 14 kindergarten teachers who had experienced staff ratio changes in past years. Nine of the kindergartens involved had experienced a reduction in teacher numbers and five had experienced an increase. The most common area identified by teachers as important was meeting the educational needs of the children. Teachers felt that children in kindergartens with two teachers were "missing out" on individual attention, small group work, extension activities (especially for nearly 5 year-olds), having special needs met or problems identified. Parent and family involvement was another area where staff in two teacher kindergartens had great problems. With larger numbers of children welcoming parents, settling in new children

, talking to parents about day-to-day problems and being available to listen to parents' problems were very difficult. Teachers in two-teacher kindergartens also felt pressured and frustrated by their difficult job situation. They were angry about the lack of clarity in the criteria for acquiring a third teacher and felt strongly that they could do little more than provide supervision for children. Time for planning and ability to carry through a plan without interruption for emergencies was problematic. Administrative, house-keeping, fund-raising and liason work were aspects of their role that they found difficulty in performing adequately because of the staffing situation.

Meade (1985) studied 6 early childhood centres - 2 kindergartens, 2 playcentres and 2 childcare centres - using observations, questionnaires and interviews. The study showed an impact of roll size or attendance on staff-child interactions. In centres with smaller numbers in the group, children were much more likely to have a chance of interacting with an adult. For example in one centre with a roll size of 41, teachers interacted with children at the rate of 3.3 times per half hour but in another centre with a roll size of 21, teachers interacted with children at the rate of 6.2 times per half hour. Yet small roll size did not necessarily ensure greater adult-child contact since one centre with 20 had only 4.3 contacts per half hour. Meade found that group size had considerable impact on most caregiver behaviour, with large group centres having less story reading and play involvement by staff but more interaction with other staff about organization, more caregiving with children, more commands, affective behaviour and group activities. Adult-child ratio is a variable which is usually related to group size. In Meade's study the kindergartens had one adult to 6 or 7 children, the childcare centres one adult to every 5 children and the playcentres one to every 2 or 3 children. Meade's data did not show any significant differences in teacher behaviour associated with ratio, but she points out that the ratio never deteriorated below 1 to 12. It should also be noted that Meade focussed on observing teacher behaviour using Honig and Lally's scale, so the study shows what children are doing only if they contacted a teacher who was being observed. It is possible that in centres with large teacher-child ratios the teachers were interacting as much with children, but fewer children were receiving those interactions.

The relationship of the quality and quantity of parent-staff communication to various measures of child behaviour and adjustment has been studied (Smith, 1987; Smith & Hubbard, in press a; Smith & Hubbard, in press b). The subjects in the study were 60 children, 20 of whom were attending full-time childcare centres, 20 kindergarten and 20 in combined childcare arrangements. The study showed that childcare staff and parents perceived their relationships with each other as closer and more personal than kindergarten parents and staff did. Childcare staff were perceived to be more available to parents than kindergarten staff. There was, however, no difference beween kindergartens and childcare centres in the amount of actual parent involvement. There was also evidence that childcare parents discussed more substantive issues with staff, such as children's activities at home or the policy and programme of the centre, than kindergarten parents. Kindergarten staff certainly have a demanding task in keeping contact with a large number of parents as well as working with a larger group of children and this seems to be reflected in their more distant

relationship with parents.

Staff behaviour was similar in kindergartens and childcare centres, but kindergarten staff did more supervising than childcare staff. Child observation data, however, suggested that kindergarten children had less contact with their teachers than childcare children. Kindergarten children interacted with a teacher for an average of 2 and a half minutes in a half-hour observation, while childcare children interacted with a staff member for an average of 5 and a half minutes per half hour observation. It seemed , therefore that kindergarten teachers did just as much interacting with children as childcare teachers, but our target children received less interaction from them because teachers were so thinly spread. We interpreted this finding as being largely a result of the much lower staff-child ratios in kindergartens compared to childcare centres. There are other possible explanations, however. Childcare children are usually at a centre for longer hours so staff may feel that it is essential to interact more with children.

The purpose of the present study was to find out how the introduction of a third teacher influenced the quality and quantity of staff/child interactions, to examine staff perceptions of the introduction of a third teacher and their work situation generally, and to examine parent perceptions of their child's kindergarten experience.

## Method

### Sample

Two Wellington kindergartens and 2 Auckland kindergartens acquiring a third teacher, were selected for detailed study. Two contrast centres in Wellington and 2 in Auckland from similar neigbourhoods were also selected. 6 target children were randomly selected from children on each kindergarten roll in November, 1986 from children who were young enough to be still at the kindergarten by June/July 1987 when the final data collection was planned. It was intended that there would be 24 target children in third teacher kindergartens and 24 contrast children in two teacher kindergartens. There was a problem, however, with attrition. There were 47 children observed at the first data collection but only 35 children (17 boys and 18 girls) were able to be observed across all 3 data collection sessions. The children ranged in age from 3 years 2 months to 4 years 5 months in November, 1986. Their mean age at the first observation was 48.97 months, at the second observation 52.97 and at the third observation 56.97.

The parents of the original 48 children filled in a questionnaire. Data was analysed for those parents who filled in both questionnaires (before and after the introduction of a third teacher). If parents did not complete one of the questionnaires they were not included in the study. There were a total of 36 parents who filled in both of the questionnaires. All of the fathers except 2, who were unemployed, were working full-time while none of the mothers worked full time. Two thirds of the mothers did not do any paid work and one third worked part-time.

All of the staff in the 8 kindergartens were the subjects of the

study. 16 staff were interviewed before the introduction of a third teacher and 20 after the introduction of a third teacher. For purposes of the statistical analyses of observational data, however, it was again necessary to discard data from teachers who were not present at all 3 data collection points. This group consisted of 13 teachers. Four teachers left in between the first and second data collection - one was from a 2 teacher kindergarten in Auckland and three were from 3 teacher kindergartens in Wellington. (There were no changes in staffing in between the second and third data collection). The open-ended interview questions of the wider group of 20 teachers were, however, analysed qualitatively. Teachers' average age was about 32 though the range was from 21 to 51 years. The average length of experience was just over 7 years but this varied from none to 18 years. Teachers had been in their present kindergarten only 2 1/2 years on average. The great majority (85%) of the sample was married but only 40% had children. All teachers who had their own children had taken some years out of kindergarten teaching to care for their own children.

Data Collection

Two research assistants were responsible for all of the observations and interviews. One was responsible for collecting data in Auckland and one in Wellington. Data was collected three times - in November/December, 1986; March/April, 1987; July, 1987.

Instruments

1. **Child Observations**: The target children from each kindergarten were observed for half an hour each at the 3 data collection points. These were interval-type observations. There were 4 main categories of child behaviour observed:- Child/Teacher Interactions (5 different sub-categories), Child/Peer Interactions (2 different sub-categories), Child/Emotional Behaviour (3 different sub-categories) and Activity (8 sub-categories). The activities were largely based on Parten's categories of social play but there were two additional categories:- caregiving with the environment and involvement in group activity.

2. **Teacher Observations**: Teachers were also observed using an interval recording procedure with pre-coded categories of observation. Each of the teachers was observed for 2 half-hour periods on 2 separate days. This was done for each teacher on each of the 3 visits. There were 4 main categories of behaviour observed:- Staff/Child Interactions (9 different sub-categories), Staff/Parent Interactions (3 different sub-categories), Staff/Staff Interactions, and Staff Activity (5 different sub-categories). The number of children each staff member spoke to was also recorded and the length of any conversation which extended beyond one interval.

3.**Teacher interviews**: Teachers were interviewed at each of the 3 data collection times. Relievers were arranged so that teachers could be interviewed during working hours.

4. **Parent Questionnaires**: Parents of the 24 target and 24 contrast children were given a short questionnaire concerning their perceptions of

the kindergarten. This was done at the first and final data collection points.

Reliability

Reliability checks on observations were carried out on 3 occasions with the two research assistants connected to the same signalling device and simultaneously but independently coding behaviour in the same individuals. Inter-observer agreement was calculated by adding the number of agreements, dividing by the number of agreements plus disagreements and multiplying by 100. The inter-observer agreement for child behaviour was 97.8%, 99% and 96.8% at the 3 checks with a mean of 97.5%, and the inter-observer agreement for staff behaviour was 91.0%, 90.6% and 93.3% with a mean of 91.6%.

Data Analysis

Qualitative analysis of open-ended interview responses was carried out. Post hoc content analysis of teacher's responses was used. Descriptive statistics (means and standard deviations) were calculated for the teacher, child and parent dependent variables - child and teacher observational data; and parent and teacher Likert ratings. The design of the study was a two way analysis of variance with repeated measures on the second factor. There are two levels of the first factor which is group (third teacher group versus contrast group) and the second factor is time of which there would be 3 levels corresponding to the 3 data collection points.

## Results

Child Observations

Table 1 shows the means and standard deviations of child behaviour at each of the three observations of child behaviour. For only one of the variables was there a statistically significant difference across time between 2 and 3 teacher kindergartens. Nevertheless the means for the different observations were looked at in order to see if there were any consistent trends in the data associated with the addition of a third teacher.

Figure 1 shows that there was a considerably greater amount of negative peer play at baseline in 3 teacher compared to 2 teacher kindergartens. After a month with a third teacher negative peer play had decreased markedly and further reduced after 6 months. At the third data collection, however, the negative interactive play was still similar for 2 and 3 teacher kindergartens. Statistical analysis showed that there was a statistically significant difference between the 2 and 3 teacher kindergartens in negative peer play across time ($F = 7.55$, $df = 1$, $p = .01$).

The arrival of a third teacher was followed by an increase in the number of interactions that children had with teachers and in more prosocial play between peers. Most categories of child/teacher interactions (verbal, non-verbal, affective, play) increased from baseline to the second and third observationsin 3 teacher kindergartens. Positive

interactions with peers increased and negative interactions decreased after the arrival of the third teacher. While these differences (except for negative peer interactions) did not reach significance, they are consistently in the direction predicted.

Teacher Observations

Table 2 shows the means and standard deviations for teacher behaviour over the 3 observations. There were no statistically significant differences between the behaviour of teachers in 2 and 3 teacher kindergartens over time, probably due to the small number (13) of subjects in the sample.

Overall there was no consistent pattern in teacher behaviour in 3 teacher kindergartens. The only behaviours which increased and were maintained after the introduction of the third teacher were non-verbal initiations to children, information-sharing to parents, casual conversation with parents, staff/staff interactions and facilitation of play (which almost doubled). Supervisory behaviour, leading a group activity and caregiving with the child and the environment decreased.

Teacher Interview and Rating Data

Job Satisfaction:

Teachers gave the impression of really liking their job. Many had decided early on a career as a kindergarten teacher and had had previous experience with children as adolescents. Most had chosen to teach in kindergartens because they had a genuine liking for children and parents and the freedom of working in a kindergarten. A typical teacher statement was:

> It's a satisfying job in that I can see, say, a child start who is very introverted and shy, and then I watch him just blossom, and by the time he is ready for school he has come out of his shell. I see so many children that I work with like that, and it is very satifying and rewarding in that way ..... I think that would be the most satisfying part of my job - watching children progress.

Although some teachers said they liked working with parents, parents were often mentioned as a problem. For example problems mentioned with parents were that they did not understand the programme or philosophy of the centre, undervalued teachers' professional qualifications, were demanding of teachers' time, and were apathetic and unwilling to be involved with the kindergarten. For example:

> A problem of the job is parent and public education. Because we don't make specific tasks for children parents don't think they are learning... Because kindergarten is not compulsory people think that it is not necessarily important. Our work is not valued as it should be.

Although most teachers said that they enjoyed their job, many of them describe it as a stressful job with competing demands on their time. For

example:

> I do enjoy my job but I would enjoy it more if I didn't have so many demands made on me. The demands would be less with a third teacher of course. I've mentioned my work is frustrating because if you want to give a child individual attention you are constantly interrupted - there are constant interruptions in this job by the parents as well as the telephone so it is frustrating in that way. It is very difficult to know how much time to give to parents and how much time to give to children.

The ratings on feelings about work differed very little on the 3 occasions that they were taken and there were no consistent differences between 2 and 3 teacher kindergartens. There were some minor fluctuations. For example there was a slight increase in how well-planned programmes were perceived to be in the 3 teacher kindergartens between baseline and the March and July ratings. There was, however, little evidence of a strong change in feeling about work after the introduction of a third teacher.

Overall job satisfaction was relatively high, but this did not reflect any consistent effect of a third teacher. Teachers had made a positive choice of their career because of wanting to work with children. They appeared highly committed to their work. Most felt that there was a high level of stress attached to the job so that they were unable to achieve all they would have wished.

Views about a Third Teacher:

At baseline 15 out of 16 teachers, when asked about the need for a third teacher thought that a third teacher was really necessary. Usually teachers gave the need to extend children or work with them individually as their reason for wanting a third teacher. Other things mentioned were reduction in the present demands of the job, more administrative help, a better quality programme, opportunity to go on excursions, do more discussion and planning, and work with parents.

When asked about how staff relationships would be affected by a third teacher, many teachers revealed apprehensions about possible problems with relationships among 3 rather than 2 people. Most of the 2 teacher kindergartens felt badly about still having to cope with only 2 teachers, for much the same reasons as they used in justifying the need, such as inability to carry through a planned activity with only 2 teachers. There was also a good deal of anger, resentment and confusion about the criteria on which kindergartens were assigned a third teacher. Several teachers felt very strongly that they did not qualify because they had succeeded through a lot of hard work in getting parents involved in their kindergarten.

Ratings at the second interview about satisfaction with working in a 3 teacher kindergarten showed a relatively high rate of satisfaction. Interview responses also indicated that teachers were very positive about having a third teacher, although some definite problems were emerging about staff relationships in one kindergarten. These will be discussed below

(see Staff Relationships heading). Teachers generally felt that more work was being done and more being achieved with children, and that there was more time to work with parents than there had been with 2 teachers. Teachers felt that there was more sharing of responsibility, and a positive effect from the input of new ideas. All were convinced of the need for and value of a third teacher. A number of teacher commented that they were just as busy as before:

By the third interview teachers in 2 teacher kindergartens felt even more negative about having only two teachers while teachers in 3 teacher kindergartens were somewhat less positive. The drop in satisfaction with working in a 3 teacher kindergarten can be accounted for by 3 teachers in a second kindergarten where there was personal conflict becoming much more negative in their ratings.

In July teachers in three teacher kindergartens were still convinced of the necessity for a third teacher and continued to express the same reasons given in the second interview for this view. In the two kindergartens where things were going really well they continued to do so. Problems had eased slightly in one kindergarten and got to almost a crisis point in another kindergarten. Although teachers were not totally satisfied with the kindergarten environment they believed (from their comments) that they were able to do much more with a third teacher. By the July interview initial worries about possible problems were easing in some of the kindergartens:

On the other hand in one kindergarten where things appeared to be going well in the second interview the situation had deteriorated badly because of personal relationship problems:

To summarise, teachers in two teacher kindergartens were extremely unhappy about their continuing lack of a third teacher. Continuing stressful work situations were described. Three teacher kindergartens were mostly happy. They saw positive effects although they were still very busy. After 6 months one kindergarten was facing serious problems with interpersonal relationships.

Working with Children:

Teacher ratings indicated that they were reasonably satisfied with the quality of the kindergarten experience though there was little evidence of any change in level of satisfaction after baseline with the introduction of the third teacher.

Most teachers said that they were achieving more with children when they had a third teacher. (The exception was one kindergarten where as early as March there was a breakdown of communication between staff). This is a typical response from a teacher:

> There are still children who aren't at the level I'd like them to be at... Settling of children is a lot easier with 3 teachers. Children that aren't easily settled can have a relationship with one adult who settles them in activities each day - close at

> hand. We get to know children. It just makes it more satisfying because of not being totally frustrated therefore not getting this or that done. If I want to observe a child I say to A and B that I'm going to do it and they free me to do it.

To summarise there was little perceptible change in rating data about more being achieved with children after the introduction of a third teacher. Teachers were unlikely to see the goals of attending to quiet and withdrawn children. understanding children from different cultural groups and doing observations as being achieved compared to many of the other goals they had. Some specific improvements in working with children were cited in interviews, such as observing children and providing special teaching time with children with special needs.

Relationships with Parents:

Teacher ratings remained very consistent over time. In other words there was no evidence that the introduction of a third teacher had much influence on the perceived quality of staff/parent relationships. Overall teachers perceived their relationships with parents as warm, more close than distant, more towards the know than don't know end of the continuum, in between personal and professional (more towards the professional end for 3 teacher kindergartens) and supportive rather than undermining.

Interview responses suggest that some teachers thought that the level of interaction with parents remained much the same with a third teacher. In fact some teachers felt that parents were actually coming in less. There seemed to be very widely varying attitudes among teachers to their role in working with parents. Here are two examples of the contrasting approaches to parents shown by teachers:-

> When we had 2 teachers parents thought the job was arduous. With 3 teachers, parents need reminding that cutting up fruit (by teachers) is half an hour lost to teaching, and thus we need the parents to come in.

> I like to be able to say what their child has done that day and say that their child is really good at puzzles or whatever.... I want them to be able to trust me and if a child isn't feeling happy I'd let them know if the child wasn't settled... I want them to know that their child is special.

To summarise, staff saw there relationships with parents as very positive, slightly more so in 2 teacher kindergartens. Little change was evident in teacher ratings of parent relationships after the introduction of a third teacher. Some staff felt that there was more opportunity to get to know parents and others felt that parent-attendance was declining. Sharply different attitudes to work with parents were revealed by teachers.

Staff Relationships and Communication:

It was in the area of staff relationships that the only real problems associated with the introduction of a third teacher emerged. One teacher summed up the importance of this area:

> For me the major problem of kindergarten teaching is trying to work out a workable relationship with another person you don't choose to work with - to develop an effective relationship with others when your ideas and approaches may be very different.

In two of the four kindergartens which acquired a third teacher serious problems arose in interpersonal relationships. In one of the two kindergartens the problem was apparent in March and in the other there was very little problem in March but the situation in July was most unpleasant. It is necessary to caution against the conclusion that such problems only arise in 3 teacher kindergartens because there were at least 2 two teacher kindergartens where staff relationships were not particularly happy. In one such case there was a change of staff, where a younger head teacher, with whom the assistant teacher shared many attitudes and values, left and was replaced by an older and more traditionally minded teacher. The new head teacher no longer shared decisions and carried out joint planning with the assistant teacher and acted in a more "boss"-like role.

Indeed the problem of two people getting on well together and the third person being excluded occurred in both of the kindergartens where there was a breakdown in relationships. In one kindergarten it was the third teacher who was left out. The head teacher and assistant had been working together for some time. The third teacher was a young enthusiastic person with lots of new ideas. Initially there was some willingness to go along with these ideas on the part of the head and the assistant but by July there was very little communication and the third teacher was very unhappy. The longer serving teachers seemed to want to carry on doing things as they had done previously. This response shows how one teacher felt:

> Things aren't going well because of personality differences. It could happen in a two teacher kindergarten. I love my work but it's not being given a chance. Work is exciting but it is crushed at the moment. If something is planned and two are against it, it could really put someone in a spot.

The other case of a failure in relationships was in a kindergarten where the head teacher who had been working in the kindergarten for some time had two new staff members to work with. They were both recent graduates and highly articulate people with strong shared views about their values and goals for the kindergarten which did not coincide with those of the head teacher. A difficult situation was apparent at the second interview in March. The head teacher clearly felt that her authority was being undermined by the new staff. Her feelings are illustrated by this response:

> I'm expected to compromise on all my ideas and in actual fact give way on some of my ideas on how the kindergarten should be run to please two new staff members.... It's always been my experience before that it is the head teacher who runs the

> kindergarten.... I teach by experience and by instinct, not by being well-read in theories so therefore I can't express things verbally as well as these young girls and it makes me feel totally inadequate.

In one of the 3 teacher kindergartens staff showed that they had worked hard to achieve a good relationships, as is illustrated by this statement:

> It makes each one of us think a lot more and talk a lot more. C and I have worked together for 3 years and we were on the same wave length. All of a sudden a third person came in and in an effort not to make that person feel left out, that she was a spare part... we had to do a lot of thinking and talking about how we would go - and I feel that the kindergarten is working well because of it.

To summarise, staff in two of the four three teacher kindergartens encountered serious problems with interpersonal relationships. In one case these emerged in March and in the other in July. Different value orientation about styles of working and running the kindergarten were evident in both cases. In each case 2 teachers had a common view and 1 person was in disagreement with that view.

Ways to Make Introduction of a Third Teacher Effective:

Teachers were asked about their ideas on how to make the introduction of a third teacher effective and what advice they would offer to other kindergartens acquiring a third teacher. Teachers directed themselves almost entirely to the question of staff relationships when answering this question. Only one teacher commented on work with children - she felt that a third teacher could be much more effectively used for intensive teaching than as an an extra "floating" person.

There was total agreement that a great deal of time needs to be set aside in discussion between the 3 teachers. One kindergarten was enthusiastic about group contracts. Meetings should be held with other kindergarten teachers who had acquired a third teacher before the third teacher started in a new kindergarten, according to one teacher. Another teacher thought that the third teacher should visit a kindergarten several times even before accepting a job so that she could get to know the other people and judge whether she was compatible with them. Also one head teacher felt that head teachers should have the final say in choosing a third teacher from several candidates in order to choose a person who would make up an effective team who got on well together. In one kindergarten where a lot of problems emerged after 6 months a teacher suggested a trial "probationary" period for the third teacher for 6 months, after which the third teacher could be transferred to another kindergarten if there were personal problems.

The head teacher in a kindergarten which had very happy interpersonal relationships believed:

> ..the most important thing is to make the third person part of

> the existing structure, to make her feel valued and an integral part of the team. We find the best way to do that is to talk about everything and listen a lot.

The actual expertise of the head teacher, especially in matters of personal relationships was thought to be critical. It was pointed out that head teachers don't always have the necessary skills as facilitators and leaders. Their experience in the kindergarten gives them lots of expertise in planning programmes for children but little preparation for managing and working with other adults.

Several teachers mentioned the importance of having an outside support person or arbitrator and the one most often mentioned was the senior head teacher. (The senior teacher had been involved in trying to assist both kindergartens who had problems). It was felt that there should be sufficient senior teachers who have both the time and the skill to help teachers work things out in 3 teacher kindergartens. The isolation of kindergartens means that it is particularly important for teachers to have contact with outside people. The senior teacher's role therefore is very important indeed. She really needs to know how to mediate and help people to resolve conflict. This means both pre-service and in-service training opportunities for staff at every level. Courses on management, communication skills, assertiveness, and coping with conflict were suggested. Release in-service days for teachers, prior to and after the introduction of the third teacher were considered necessary. Greater emphasis on handling interpersonal relationships through role-playing and similar techniques in Teachers College courses was also recommended.

To sum up most teachers believed that communication and joint decisions were necessary for the effective introduction of a third teacher. Head teachers and senior head teachers need particular leadership and facilitating skills. Courses focussed on interpersonal relationships and management were thought to be essential.

Parent Questionnaires

The questionnaire included ratings of parents feelings of satisfaction about the kindergarten and invited open-ended comments if they wished to make them. Parents rated their children as extremely happy at kindergarten, both before and after the introduction of a third teacher in both 2 and 3 teacher kindergartens. The overall average rating was 4.71 (5 being the most positive and 1 the most negative). Parents also believed that kindergarten provided highly favourable learning experiences for their children (mean rating of 4.61). There were only minor and insignificant change in parent ratings after the introduction of a third teacher.

Parent comments backed up their very positive ratings of kindergartens. Most were positive and the staff were given high praise. Examples of parents' positive comments are:-

> "It is the most pleasant kindergarten I have had experience with. I think that the teachers are well aware of small children's needs and very alert to these."

> "S. and C. have a wonderful relationship with all the children, and my son has come on extremely well under their care."

There were only 2 positive comments directed specifically at the improvement related to the introduction of a third teacher and these both came from parents with a child in a kindergarten which had acquired a third teacher.

> "I think it's been very valuable having the third teacher in particular to enable to teachers to work in small groups individually with those that need it."

> "... having the 3 teachers this year has made a big difference to the quality and quantity of learning experiences in the kindergarten. Each teacher provides a different quality and they therefore complement each other very well to produce a more balanced learning environment."

There were more positive (17) than there were negative comments (9). Negative comments were directed at a number of issues. A few comments suggested parent dissatisfaction about parent/staff relationships and the nature of parent involvement in the kindergarten. For example:

> "I would like to see a little more involvement of parents in pre-school education i.e. more insight and explanation of practical activities that promote learning. The reason for this is partly so I could continue this education more at home. I've always found that I run out of ideas at home and appreciate help from kindergarten's trained teachers. Also to be able to continue on from kindergarten activities."

To summarise parents were generally very happy with their child's kindergarten experience. This showed in very positive ratings and the fact that positive comments outnumbered negative comments. Parents said that they were encouraged to participate but there was a great amount of variability in the amount of parent helping done by parents - some did a great deal and some did none. Other family demands were the main reason for lack of participation. There was no perceptible change in parents' satisfaction with kindergarten after the introduction of a third teacher. Parents did not think that they did less parent help when there was a third teacher.

A few negative comments suggested that some kindergartens could do more to welcome and give information to parents, to involve them in more rewarding parent help activities and to make fewer demands on them for fund-raising.

Ratio of Adults to Children in Kindergartens

Data was gathered on the actual ratio of adults to children in kindergartens during the days when researchers were observing. To be included in this data the adults had to be involved in interactions with the children. Unfortunately due to a failure in communication amongst the

researchers the data is not quite complete. Data about actual adult/child ratio is missing for two of the three teacher kindergartens at baseline (before they got their third teacher). We counted adults whose role at the kindergarten involved working with children in the group setting. Such adults included kindergarten teachers, parent helpers, teachers college students and other professionals (eg special education teacher, psychologist).

Table 3 shows the detailed data for number of adults and children present at the third data collection for two and three teacher kindergartens. The average ratios for the first two data collections are also included. The table illustrates that up to 5 additional adults were present in kindergartens. The average adults (extra to staff) in 2 teacher kindergartens was 2.5 per session and in 3 teacher kindergartens it was 1.5 per session. It appears from this data that two teacher kindergartens were getting more support from non-teaching adults than three teacher kindergartens. Total group size on any one day varied from a low of 19 to a high of 36. Two teacher kindergartens started out at baseline with a more unfavourable adult/child ratio (1:9.3) than three teacher kindergartens (1:8.5) (though data from two kindergartens was missing). The average adult/child ratio improved from 1:to 8.5 at baseline to 1:7 and then 1:6 in three teacher kindergartens. There was also an improvement in ratio, however, for two teacher kindergartens from 1:9.3 at baseline to 1:7.3 in July. In individual cases, however, there was absolutely no difference in the adult/child ratios of 3 and 2 teacher kindergartens. For example both kindergarten A (a 2 teacher kindergarten) and kindergarten F (a 3 teacher kindergarten) had a mean adult/child ratio of 1:5 during our July visit. Another surprising feature of this data is that group size, presumably as a result of bigger attendance, was larger in the two teacher kindergartens.

These figures are important because they show only small differences in actual adult/child ratio between 2 and 3 teacher kindergartens. At data collection 3 the average ratio for 3 teacher kindergartens was 1:6 and the average ratio for 2 teacher kindergartens was 1:7.3. Moreover two teacher kindergartens appeared to start from a more unfavourable ratio but also improve over time. It is therefore hardly surprising that our statistical analyses showed few significant differences between 2 and 3 teacher kindergartens because the differences in actual adult/child ratios was small.

## Discussion

The present study showed that the introduction of a third teacher had a significant effect on negative peer behaviours. The introduction of a third teacher reduced children's arguments and aggressive behaviour towards each other. Although there was a low incidence of such behaviours, they are often particularly troublesome to the teacher, requiring her attention and intervention. The incidence of such negative behaviour was initially a great deal higher in 3 teacher kindergartens than in 2 teacher kindergartens. They were observed to occur in three teacher kindergartens for an average of about 30 seconds per child in 30 minutes of observation. If the data is extrapolated to cover the 3 hour kindergarten session this would mean an average of 3 minutes of negative peer play per child. If there was an average attendance of 30 then the teacher could expect about

90 minutes of negative peer behaviour per session which would cover about half of a session. One month after the introduction of a third teacher, negative peer play was reduced to 45% of its original level and 6 months after the introduction of a third teacher it was reduced to 6% of its original level. This is a striking positive effect which replicates Russell's (1985) study that annoy/tease behaviours declined markedly in South Australian kindergartens when teacher/child ratios were improved.

Caldwell (1974) suggests that early childhood centres must teach children to share and learn prosocial, non-violent ways of dealing with conflict. She argues that in order to do so adults must be available to mediate and de-escalate children's aggressive behaviour and help them find alternative ways of handling problems. The present study suggests that the presence of sufficient trained adults is one factor in the control of children's negative behaviours towards each other. The early development of aggressive ways of dealing with conflict may well foreshadow the problems of violence in our society discussed in the Roper Report (1987). The Roper Report recommends that there is an urgent need to increase resources in early childhood education as one way of reducing violence in our society. Improving teacher/child ratios was shown to decrease conflict between preschool children in the present study, supporting the recommendations of the Roper Report.

There were consistent (but not statistically significant) trends for children in kindergartens who had received a third teacher to have an increased amount of verbal and non-verbal interaction with teachers, to express more positive affect towards teachers, and to engage in more positive play with peers. That the differences did not reach statistical significance may be explained by the very minimal differences in adult/child ratio between 2 and 3 teacher kindergartens (1:6 compared to 1:7.3 at the final data collection), and by the fact that both 2 and 3 teacher kindergartens had improving adult/child ratios over time. Consideration of the actual adult/child ratio rather than the trained teacher/child ratio reveals a very different situation than would be expected. Another factor was that the sample size declined to 37 due to attrition, making it very difficult to achieve statistically significant results.

Our observations of the 13 kindergarten teachers who had been present at all three data collections did not reveal any significant change in teacher behaviour with the introduction of the third teacher. As there were only 6 teachers in the 3 teacher kindergartens and 7 in the 2 teacher kindergartens, it was most unlikely that we would find significant differences because of small sample size. It was encouraging, however, to see that there was an increase in facilitation of play behaviour, non-verbal initiations to children and conversations with parents in kindergartens with 3 teachers. There was a slight increase in staff talking to each other after the third teacher joined the staff which Clift (1980) also found. Unlike the Clift study, however, the present study showed no increase in domestic activities with the addition of a further staff member.

Interview material suggests that teachers, especially in the "successful" kindergartens felt more satisfied with the work they were

doing with children. More time was spent on planning programmes in three teacher kindergartens. Procedures such as staff doing systematic observations of children, special one-to-one teaching time with children with special needs and a wider array of special activities being available for children (such as cooking) were observed after a third teacher joined some kindergartens. Staff felt equally busy but felt that this was because they were attempting more. Teachers in both 2 and 3 teacher kindergartens felt that their goals of attending to quiet and withdrawn children, meeting the needs of different cultural groups and doing detailed observations of children were not being achieved as readily as other goals.

Again it must be cautioned that the rather minor change in actual ratio could not be expected to cause very radical change in kindergarten programmes. If, as some teachers suspected, fewer parents were participating in the programme with the third teacher then this is a cause for concern and likely to work against the effectiveness of the new staff member. The presence of non-staff adults probably helped to decrease the difference between 2 and 3 teacher kindergartens in actual adult/child ratio. There were more such non-staff adults involved in 2 teacher kindergartens than in 3 teacher kindergartens. We do not have strong evidence to show that parents participated less with the third teacher, however since parents did not believe that they had participated less when the kindergarten acquired a third teacher. Nevertheless this must be watched very carefully and teachers in 3 teacher kindergartens need to communicate with parents that they are welcomed and needed even when there is another staff member. Parents have an important role in improving the quality of the kindergarten environment. Indeed we suspect that the greater number of non-staff adults involved in 2 teacher kindergartens were a necessity for these kindergartens to run at all. Non permanent adults cannot fulfil the important role that stable trained staff members are needed for as is shown by the effect of trained staff and negative peer play.

The area of parent relationships appears to be one where staff have widely differing views and practices. Some staff believe that talking to parents about their concerns is an important responsibility which affects their work with children. Others seem to prefer to talk to parents on a superficial level. When teachers expect parents to do "low level" tasks such as doing the dishes or cutting up fruit they reveal attitudes that parents should play a somewhat inferior role. Some staff felt unsupported by parents who undervalued the importance of their job and the kindergarten programme.

While parents felt generally very supportive of their children's kindergarten and believed that their children benefitted greatly from the experience, many were unable to participate in programmes because of other responsibilities. Some parent comments do suggest that teachers could be more effective in making parents feel welcome and an important component of the kindergarten environment. A few parents also showed awareness and unhappiness about the way teachers expected them to play a limited domestic role within the kindergarten.

Smith & Hubbard (in press) found that reciprocal, warm and balanced parent/staff relationships were associated with more

positive behaviour and adjustment of children to early childhood centres, supporting Bronfenbrenner's (1979) view that interconnections between settings where children spend time are important. Kindergartens sometimes do not encourage such warm, balanced and reciprocal relationships with parents. The present study revealed clear dissonance in some kindergartens between parents and staff. Sometimes it was a question of a clash in values and at other times teachers were dispirited at parental apathy. The whole area of parent/staff relationships appeared to be a worry to some teachers. In-service training courses on working with parents are badly needed so that staff skills in this area can be sharpened. Some teachers we talked to worked hard and successfully at making parents feel part of the kindergarten and encouraging them to participate. If parents are to understand and support the kindergarten programme, understanding can best come through information and communication from the teachers. Much can be learned from teachers who have worked successfully with parents. The rating data showed that relationships with parents were not quite as close in 3 as in 2 teacher kindergartens. This may be due to differences in the parent population served by 2 and 3 teacher kindergartens, but nevertheless it indicates that 3 teacher kindergartens probably need extra help in this area.

The study showed that interpersonal relationship problems do occur in kindergartens. We cannot say with certainty whether the three teacher situation is more likely to give rise to such problems, although there is some suggestion that this may be the case. In two of the four 3 teacher kindergartens serious problems arose mainly because of differences in opinion about how the kindergarten should operate and what different teachers' responsibilities were. In one case the established teachers (head and assistant) rejected the approach of a younger third teacher. In another case two more recently trained teachers disagreed with the head teacher's approach and felt that much more should be being done in certain areas. The question of the hierarchy of responsibility and decision-making was central to these problems. For example in one kindergarten the head teacher felt that she must take a dominant role while the other teachers would have preferred to operate under consensus. In the two 3 teacher kindergartens where relationships were harmonious there appeared to be much more conscious effort to accept and welcome the new staff member and integrate her preferences and approach into the team with shared work and decisions. The head teacher in successful 3 teacher kindergartens seemed to see herself as taking a major role as facilitating group decisions, rather than as an unilateral decision-maker.

According to Bronfenbrenner's (1979) ecological orientation roles are an important part of the microsystem of early childhood centres. Roles are activities and relationships expected of a person occupying a particular position. They are characterised by varying degrees of degree of warmth, reciprocity and balance of power between people engaged in various roles. Changes in role are associated with marked alterations in behaviour. Many of the problems we observed appeared to be associated with differing understanding of the role of head teacher held by different teachers, exacerbated by having to change and redefine roles. Successful

kindergartens had a great deal of communication about everyone's roles and responsibilities when the new staff member arrived. Everyone had a clear conception of their roles and there was a great deal of warmth, reciprocity and balance of power between the different teachers. Possibly there was a fortunate blend of different people in the successful kindergartens. Our impression, however, is that successful relationships did not just happen but were worked on carefully. The introduction of a third teacher probably sparked problems because it did involve role transition and this necessitated a change in the usual pattern of behaviour of all participants.

The present study suggests that developing positive interpersonal relationships is a critical area where kindergartens need help. Kindergartens are isolated from each other and the close and continuing contact between teachers requires considerable shared understanding and purpose. If relationships are unhappy this is likely to lead to staff turnover which has a negative effect on the children and the whole climate of the kindergarten. Much more help is needed to prepare kindergarten teachers for the task of learning to work together in a colleagial, non-hierarchical manner. Such help should be part of pre-service courses at Teachers College, and regular in-service work. Indeed it is essential for teachers about to experience a transition to a new staffing arrangement to have release-time to come to grips with the issues and develop a plan to cope with the change. Head teachers, especially those trained some time ago, need refresher courses to give them access to new ideas about early childhood education, including modern management styles. Value clashes will be less likely if head teachers are up-to-date in their field. The availability of sufficient support staff, especially senior head teachers, is also an important factor in dealing with staff relationship problems. Training is essential to allow senior teachers to cope with conflict and encourage more favourable staff relationships.

To conclude, the study showed that there were some very positive effects of the introduction of a third teacher into kindergartens. It is absolutely essential in our view that the two teacher, forty child kindergarten becomes part of history as soon as possible. In order to allow staffing changes to improve the quality of kindergartens, the staff must be given access to time, resources and skills to help them cope with change. Indeed the introduction of a third teacher into kindergartens is only one of the kind of changes that kindergartens need to face up to in a changing society. It is to be hoped that such changes as smaller group size, longer hours of operation, and cross age groups of children will occur in the future. The present researchers would welcome such changes but hope that they also will be accompanied by systematic evaluation.

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Table 1

Observations of Child Behaviour (n=35)

| | | Data Collection 1 | | Data Collection 2 | | Data Collection 3 | |
|---|---|---|---|---|---|---|---|
| | | 2T (n=14) | 3T (n=21) | 2T (n=14) | 3T (n=21) | 2T (n=14) | 3T (n=21) |
| CHILD-TEACHER INTERACTIONS | | | | | | | |
| Verbal | $\bar{X}$ | 10.71 | 8.07 | 10.57 | 11.57 | 6.48 | 13.29 |
| | S | 7.34 | 6.12 | 10.37 | 5.71 | 5.79 | 11.57 |
| Non-Verbal | $\bar{X}$ | 8.04 | 8.14 | 7.38 | 12.35 | 6.95 | 10.14 |
| | S | 4.63 | 5.98 | 4.72 | 12.76 | 4.02 | 7.29 |
| Socio-emotional positive | $\bar{X}$ | 5.38 | 4.07 | 4.86 | 5.21 | 4.76 | 7.79 |
| | S | 5.56 | 3.91 | 5.68 | 5.59 | 5.77 | 11.49 |
| Socio-emotional negative | $\bar{X}$ | 0 | 0 | 0 | 0 | .05 | .14 |
| | S | 0 | 0 | 0 | 0 | .22 | .54 |
| Postive interactive play | $\bar{X}$ | 5.62 | 5.50 | 16.95 | 19.43 | 17.24 | 20.86 |
| | S | 7.97 | 6.37 | 21.92 | 22.92 | 15.02 | 29.72 |
| CHILD-PEER | | | | | | | |
| Negative interactive play | $\bar{X}$ | .29 | 2.21 | .67 | 1.00 | .24 | .14 |
| | S | .56 | 1.93 | 1.28 | 1.62 | .70 | .36 |
| Verbal | $\bar{X}$ | 32.52 | 36.79 | 30.91 | 35.14 | 22.43 | 29.57 |
| | S | 16.92 | 14.07 | 20.09 | 19.44 | 13.80 | 18.31 |
| CHILD EMOTIONAL | | | | | | | |
| Distress | $\bar{X}$ | .05 | .21 | 0 | .43 | .048 | .071 |
| | S | .22 | .58 | 0 | 1.34 | .22 | .27 |
| Laughter or Smiles | $\bar{X}$ | 19.05 | 18.71 | 14.24 | 14.50 | 11.76 | 16.21 |
| | S | 17.99 | 13.33 | 12.70 | 12.85 | 6.06 | 12.67 |

Table 1 (Continued)

| | | Data Collection 1 | | Data Collection 2 | | Data Collection 3 | |
|---|---|---|---|---|---|---|---|
| | | 2T (n=14) | 3T (n=21) | 2T (n=14) | 3T (n=21) | 2T (n=14) | 3T (n=21) |
| ACTIVITY | | | | | | | |
| Unoccupied | $\bar{X}$ | 15.81 | 18.50 | 8.00 | 8.07 | 9.00 | 6.07 |
| | S | 8.81 | 12.40 | 6.06 | 5.40 | 6.11 | 3.13 |
| Onlooker | $\bar{X}$ | 11.19 | 15.29 | 9.71 | 14.24 | 9.95 | 7.93 |
| | S | 10.83 | 10.59 | 6.18 | 9.12 | 6.99 | 6.46 |
| Solitary Independent | $\bar{X}$ | 12.38 | 10.07 | 10.43 | 10.43 | 9.14 | 11.93 |
| | S | 11.88 | 9.66 | 9.77 | 9.49 | 6.66 | 14.68 |
| Parallel | $\bar{X}$ | 46.19 | 43.14 | 36.38 | 40.00 | 53.05 | 48.21 |
| | S | 19.68 | 17.70 | 15.77 | 18.71 | 20.88 | 21.77 |
| Associative | $\bar{X}$ | 9.81 | 19.21 | 18.29 | 14.64 | 13.52 | 22.79 |
| | S | 11.74 | 15.35 | 17.05 | 14.79 | 16.84 | 18.43 |
| Dramatic | $\bar{X}$ | 2.10 | 4.29 | 4.00 | 3.36 | .95 | 1.71 |
| | S | 5.05 | 16.04 | 7.40 | 9.16 | 3.49 | 5.06 |
| Caregiving Environment | $\bar{X}$ | 5.43 | 3.64 | 3.91 | 4.07 | 5.57 | 5.00 |
| | S | 6.51 | 6.47 | 4.34 | 5.74 | 5.84 | 5.08 |
| Group Activity | $\bar{X}$ | 10.67 | 3.21 | 7.81 | 9.93 | 15.81 | 16.36 |
| | S | 8.45 | 6.66 | 8.58 | 11.05 | 18.82 | 15.43 |

Table 2

Teacher Behaviour

| CATEGORY | OBSERVATION 1 (Baseline) | | | | OBSERVATION 2 | | | | OBSERVATION 3 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 Teacher | | 3 Teacher | | 2 Teacher | | 3 Teacher | | 2 Teacher | | 3 Teacher | |
| | $\bar{x}$ | s | $\bar{x}$ | s | $\bar{x}$ | s | $\bar{x}$ | s | $\bar{x}$ | s | $\bar{x}$ | s |
| | n = 7 | | n = 6 | | n = 7 | | n = 6 | | n = 7 | | n = 6 | |
| **Staff/Child** | | | | | | | | | | | | |
| Verbal initiations | 83.71 | 21.05 | 82.83 | 24.34 | 92.43 | 21.23 | 86.50 | 29.02 | 77.57 | 18.14 | 83.83 | 21.19 |
| Verbal direction | 44.29 | 21.88 | 36.50 | 6.83 | 41.43 | 17.46 | 32.33 | 15.67 | 36.14 | 12.92 | 29.83 | 4.26 |
| Verbal response | 63.43 | 19.48 | 63.50 | 10.13 | 62.71 | 15.01 | 64.83 | 20.35 | 56.71 | 7.80 | 57.83 | 20.92 |
| Verbal conversation | 23.57 | 25.06 | 10.67 | 12.53 | 15.14 | 14.63 | 7.67 | 9.77 | 15.29 | 12.51 | 10.50 | 13.43 |
| Exposition | 28.14 | 17.09 | 13.61 | 6.80 | 24.57 | 13.88 | 14.83 | 12.09 | 26.57 | 13.13 | 17.83 | 9.66 |
| Nonverbal initiation | 8.14 | 8.84 | 9.00 | 7.82 | 16.57 | 20.60 | 21.50 | 21.22 | 24.57 | 24.28 | 36.50 | 28.21 |
| Nonverbal response | 18.17 | 5.60 | 21.40 | 4.28 | 17.67 | 8.82 | 21.00 | 10.93 | 16.00 | 2.83 | 14.80 | 9.99 |
| Socioemotional +ve | 94.17 | 20.99 | 65.67 | 23.59 | 59.50 | 11.02 | 43.44 | 22.30 | 54.50 | 10.48 | 44.33 | 14.99 |
| Socioemotional -ve | .29 | .76 | .50 | .55 | .86 | 1.22 | 1.33 | 2.81 | .57 | 1.13 | 0 | 0 |
| Staff/parent | 18.17 | 5.60 | 21.40 | 4.30 | 17.67 | 8.82 | 21.00 | 10.93 | 16.00 | 2.83 | 14.80 | 9.99 |
| Greeting/farewell | 6.14 | 7.60 | 4.83 | 4.22 | 3.43 | 2.37 | 2.83 | 2.32 | 2.71 | 2.36 | 3.17 | 1.72 |
| Information sharing | 7.43 | 12.61 | 19.67 | 19.23 | 13.00 | 11.72 | 21.00 | 10.95 | 21.29 | 18.09 | 25.17 | 17.37 |
| Casual | 6.83 | 4.71 | 12.00 | 13.39 | 14.17 | 14.19 | 18.17 | 19.93 | 16.17 | 8.13 | 20.17 | 16.94 |
| **Staff/Staff** | 18.00 | 7.12 | 10.80 | 8.96 | 9.57 | 3.31 | 12.60 | 2.41 | 8.71 | 4.89 | 17.40 | 13.05 |
| **Staff Activity** | | | | | | | | | | | | |
| Caregiving child | 12.0 | 9.14 | 11.33 | 9.22 | 5.20 | 3.56 | 15.50 | 16.87 | 7.20 | 9.39 | 4.83 | 4.12 |
| Caregiving environment | 52.14 | 36.67 | 59.83 | 36.23 | 47.43 | 12.21 | 65.33 | 38.52 | 43.00 | 30.01 | 40.17 | 30.89 |
| Facilitation play | 111.14 | 38.36 | 92.00 | 62.16 | 121.29 | 12.26 | 88.00 | 55.21 | 125.00 | 31.98 | 148.67 | 36.78 |
| Supervisory | 38.33 | 19.09 | 53.50 | 21.75 | 43.00 | 23.89 | 45.83 | 8.40 | 26.67 | 17.89 | 39.67 | 21.83 |
| Leading group activity | 27.33 | 24.30 | 23.33 | 24.69 | 30.67 | 20.94 | 22.00 | 32.57 | 38.17 | 24.43 | 6.67 | 16.33 |

Table 3
Ratio of Adults to Children at Third Data Collection Compared to First Two

| Kinder-garten | Session | Atten-dance | No. Adults | Mean No. Chn. | Mean No. Adults | Adult/Child Ratio DC1 | DC2 | DC3 |
|---|---|---|---|---|---|---|---|---|
| **2 Teacher** | | | | | | | | |
| A | am | 34 | 3 + 2T = 5 | 33.7 | 6 | 1:4 | 1:4 | 1:5 |
| | am | 34 | 5 + 2T = 7 | | | | | |
| | pm | 33 | 4 + 2T = 6 | | | | | |
| B | am | 32 | 3 + 2T = 5 | 29.8 | 5 | 1:8 | 1:7 | 1:6 |
| | pm | 21 | 3 + 2T = 5 | | | | | |
| | am | 33 | 2 + 2T = 4 | | | | | |
| | am | 33 | 3 + 3T = 6 | | | | | |
| C | am | 31 | 0 + 2T = 2 | 29.3 | 2.7 | 1:9 | 1:15 | 1:10 |
| | am | 29 | 1 + 2T = 3 | | | | | |
| D | am | 35 | 3 + 2T = 5 | 34.3 | 4 | 1:16 | 1:12 | 1:8 |
| | am | 32 | 1 + 2T = 3 | | | | | |
| | am | 36 | 2 + 2T = 4 | | | | | |
| **$\bar{X}$ for 3 data collections** | | | | 31.8 | | 1:9.3 | 1:9.5 | 1:7.3 |

Average extras 2.5

Table 3 (cont)

| Kinder-garten | Session | Atten-dance | No. Adults | Mean No. Chn. | Mean No. Adults | Adult/Child Radio DC1 | DC2 | DC3 |
|---|---|---|---|---|---|---|---|---|
| 3 Teacher | | | | | | | | |
| E | pm | 26 | 4 + 3T = 7 | 28.5 | 5.3 | - | 1:6 | 1:5 |
| | am | 31 | 3 + 3T = 6 | | | | | |
| | pm | 23 | 1 + 3T = 4 | | | | | |
| | am | 34 | 1 + 3T = 4 | | | | | |
| F | am | 30 | 2 + 3T = 5 | 28.5 | 5.8 | 1:9 | 1:7 | 1:5 |
| | pm | 25 | 3 + 3T = 6 | | | | | |
| | am | 30 | 2 + 3T = 5 | | | | | |
| | pm | 29 | 4 + 3T = 7 | | | | | |
| G | am | 27 | 1 + 3T = 3 | 23.4 | 3.6 | - | 1:7 | 1:5 |
| | am | 19 | 2 + 3T = 4 | | | | | |
| | am | 22 | 0 + 3T = 3 | | | | | |
| | am | 24 | 0 + 3T = 3 | | | | | |
| H | am | 32 | 1 + 3T = 4 | 27.8 | 3.8 | 1:8 | 1:8 | 1:7 |
| | am | 32 | 1 + 3T = 4 | | | | | |
| | | 23 | 0 + 3T = 3 | | | | | |
| | | 24 | 0 + 3T = 3 | | | | | |
| X for 3 data collections | | | | 27.05 | | 1:8.5 | 1:7 | 1:6 |

Average extras 1.5